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SYMPOSIUM: CLINICAL RISK AND JUDICIAL REASONING

Medical Malpractice and the Sports Medicine Clinician

Steven M. Kane MD, Richard A. White MD

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Abstract More individuals are participating in athletics today than ever before. Physicians treating athletes confront unique diagnostic and treatment challenges and an increased risk of legal liability. The key areas regarding liability are preparticipation examinations, determination of eligibility, evaluation of significant on-field injuries, and information disclosure. The issues surrounding preparticipation physicals and determination of eligibility are closely linked. Physicians must be prepared to seek guidance from specialists, particularly when there are cardiac, spinal, or neurologic issues. Appropriate on-field evaluation of potential concussions, spinal injuries, and heat stroke are key areas of concern for the physician. Privacy issues have become more complex in the age of federal regulation. Physicians and all athletic staff should be aware of privacy laws and ensure proper consent documentation is obtained from all athletes or their parents. All athletic programs should develop a plan that details roles and procedures to be followed in a medical emergency. Sports caregivers must take affirmative steps that better protect their patients from harm and physicians from legal liability.

Each author certifies that he has no commercial associations (eg, consultancies, stock ownership, equity interest, patent/licensing arrangements, etc) that might pose a conflict of interest in connection with the submitted article.

S. M. Kane (✉)
Department of Orthopaedic Surgery, Atlanta Medical Center, 303 Parkway Drive NE, Box 442, Atlanta, GA 30312, USA
e-mail: StevenM.Kane@tenethealth.com

R. A. White
Department of Orthopaedic Surgery, University of Missouri, Columbia, MO, USA

Introduction

Athletic participation is popular. During 2005, 7,018,709 high school students participated in team sports [2]. During 2001, colleges and universities sponsored 355,688 athletes, an increase of 80,383 from a decade earlier [1]. As a reflection of the participation of younger athletes, each year, roughly 775,000 children younger than age 15 receive emergency treatment for athletic injuries, and during 1998 to 1999, 200,000 persons with basketball injuries and 159,000 persons with football injuries received treatment [11].

In the past, athletes were treated by the family doctor or a general surgeon. Extremity injuries were usually immobilized followed by limited physical therapy and a less-than-certain return to full sports participation. Additionally, the majority of athletes were young and male. The athletic environment is different today. The passage of Title IX encouraged female participation in sports like basketball, soccer, and volleyball. Adults 65 and older increasingly participate in activities such as the National Senior Games, an Olympic-style event that had 2500 participants in its 1987 debut but featured 12,000 in 2007 [48]. A 1998 survey found the number of sports-related injuries among persons age 65 or older had increased by 54% between 1990 and 1996 [57].

A number of published reports agree there has been an increase in legal claims against sports medicine physicians since 1990 [17, 54]; however, this statement is usually supported by anecdotal or secondary sources and not documented data. It is indisputable that claims regarding specific sports and types of injuries have increased in number and dollar amounts. For example, from 1970 to 1985, 25 claims were filed in the United States on behalf of athletes who sustained head or neck injuries and a total of

$45.8 million awarded [53]. Of that amount, $38.7 million was awarded from 1980 to 1985, meaning at a time of rapid decrease in catastrophic head and neck injuries, litigation increased [23].

By the 1990s, multimillion dollar claims were seen more frequently, although they often resulted in settlement for greatly reduced amounts. Perhaps the most prominent example was the case of Hank Gathers, a Loyola Marymount University basketball star who died as a result of idiopathic cardiomyopathy during a 1990 game. A $32.5 million claim by family members against 11 defendants, including Gathers' cardiologist, was eventually settled for $1 million in 1992 [25, 36]. More recently, the widow of Korey Stringer, a player for the National Football League's Minnesota Vikings who died of heat stroke during a 2001 practice, sued the team and its physician for $100 million [60]. That suit was dismissed in 2005, but at this writing, her claims against the league and helmet manufacturer, Riddell Sports Group Inc, are pending [58]. The potential liability of team physicians, particularly in treating professional athletes, has also affected the cost and availability of malpractice insurance, even among the most prominent practitioners of sports medicine [50]. In addition to claims based on the occurrence and treatment of injuries, allegations of medical negligence now also occur when medical clearance to participate is withheld [30, 31, 52]. Privacy concerns are of increasing relevance; the sports physician should understand the privacy rules that apply to information released to coaches, athletic departments, and the media [55].

The medicolegal aspects of sports medicine have been the subject of several recent general reviews such as those by Pearsall et al. [54] and Sanders et al. [59]. Areas of specific concern such as doping [21], dietary supplements such as ephedra [56], and eating disorders [8] have been addressed in a growing body of literature. The challenges facing the sports medicine clinician continue to grow as the law evolves. The purpose of this article is to focus on practical information and developments and to describe actions that can be taken by any sports medicine physician to protect athletes and ensure there is no unnecessary exposure to legal liability. We review legal liability in the practice of sports medicine in light of the duties of the team physician, the preparticipation physical examination, determination of eligibility, importance of documentation, coverage of athletic events (including the use of an emergency action plan), field evaluation of life-threatening emergencies, and information disclosure.

Duties of the Team Physician

A number of organizations have attempted to define the duties and qualifications of a team physician. The Team Physician Consensus Statement is an effort by the American Academy of Family Physicians, American Academy of Orthopaedic Surgeons, American College of Sports Medicine, American Medical Society for Sports Medicine, American Orthopaedic Society for Sports Medicine, and the American Osteopathic Academy of Sports Medicine [4]. It defines the duties of a team physician as follows: "The team physician should possess special proficiency in the care of musculoskeletal injuries and medical conditions encountered in sports. The team physician also must actively integrate medical expertise with other healthcare providers, including medical specialists, athletic trainers, and allied health professionals. The team physician must ultimately assume responsibility within the team structure for making medical decisions that affect the athlete's safe participation" [4].

By this definition, a team physician is responsible for decisions related to the care of the athlete, and in this duty, the physician must consult a specialist when necessary. A cervical spine injury, for example, should prompt a consultation with a spine specialist. Specialty care for team athletes in cardiology, otorhinolaryngology, internal or family practice medicine, and other fields should be coordinated by the team physician.

The Team Physician Consensus Statement also specifies administrative and logistic duties. One of these is the education of athletes, parents, administrators, coaches, and other parties about the medical care of athletes. Regular meetings with coaches, trainers, emergency personnel, and athletes and their parents to discuss safety and related issues could decrease liability exposure. In a legal case in point, a high school athlete collapsed after a preseason football practice. The jury verdict in favor of the coaching staff was related, in part, to the perception that "rather than a substantial lack of concern, the coaches showed substantial concern for the well-being of their students" [45].

Preparticipation Physicals

Negligence can arise from the perceived inadequacy of preparticipation physical examinations that are now mandated in nearly all athletic programs. The team physician oversees these examinations with the goal of identifying serious conditions that might preclude athletic participation. Cardiomyopathy is a particular concern, because it is a leading cause of cardiac arrest and death in young athletes [12]. The American Academy of Pediatrics, American College of Sports Medicine, and the American Orthopedic Society for Sports Medicine have recommended comprehensive preparticipation physical examinations to identify such conditions [37, 43]. The extent of the required screening remains unclear, however. The majority of

sudden cardiac deaths in young athletes is linked to hypertrophic cardiomyopathy, which can be difficult to identify [39, 63]. Because only a few patients with hypertrophic cardiomyopathy have subaortic stenosis, a cardiac murmur may be absent [37, 43]. Many sports physicians are not familiar with cardiac pathology and stethoscope examinations to reliably detect hypertrophic cardiomyopathy during high school physical examinations.

Echocardiography can detect hypertrophic cardiomyopathy, but it has limitations. One issue is the uncertain yield in detecting new cases of hypertrophic cardiomyopathy. In several large studies of high school and college athletes, no cases of hypertrophic cardiomyopathy, Marfan's syndrome, or any other potentially lethal cardiac condition were identified on screening examinations [16, 33, 46, 65]. Also, screening echocardiography is expensive; the cost of the echocardiogram is between $500 and $700 with a professional reading fee of between $400 and $500. Probably the most effective way to detect a life-threatening cardiac anomaly is a comprehensive patient and family history. However, competitive athletes may not fully disclose their symptoms to avoid exclusion, and cardiac disease may therefore go undetected [66].

Preparticipation physical examinations were performed by the family doctor in the past. Today, these are usually performed by volunteer physicians or others who may be contracted for this work. The screening examinations are often performed in gymnasiums and classrooms, where the ability to detect subtle findings may be less, independent of physician skill. An alternative is examination by a skilled cardiologist and other specialists, which could improve the diagnostic value of the screening [13]. In one study, 501 college athletes were screened with an electrocardiogram and medical history; of these, 90 were selected for a cardiac echocardiogram, and none were disqualified from participation [15].

The incidence of cardiac disease and the acceptable risk in letting an athlete participate remain uncertain. Several studies suggest the risk of a young athlete dying from a cardiac-related disease is between one in 217,000 and 300,000 participants per year in the United States, or approximately 10 deaths a year [39, 63]. The three leading causes of cardiac-related deaths in athletes appear to be hypertrophic cardiomyopathy (36%), coronary artery anomalies (19%), and increased cardiac mass not diagnostic of hypertrophic cardiomyopathy (10%) [38].

On April 20, 2005, a National Football League lineman who played for the San Francisco 49ers died of a myocardial infarction. The athlete was in good health and had passed the screening examinations required by the National Football League and earlier preparticipation physical examinations during his high school and college years. The autopsy showed long-standing cardiac disease [49]. This case illustrates the concern about the effectiveness of the preparticipation physical examination in identifying cardiac risk. One author concluded "although the conduction of preparticipation exams is considered medically and legally necessary and benevolent by many, the actual utility of at least the cardiovascular component, specifically in terms of screening for lethal conditions, is questionable from an epidemiologic standpoint" [66]. Even so, the American Heart Association has recommended the cardiovascular screening of competitive athletes should be performed by professionals with appropriate training [41]. Every athlete should undergo a complete personal and family history and physical examination; those with an identified abnormality should be evaluated according to the Bethesda Guidelines, which provide diagnostic criteria for 70 cardiovascular abnormalities and diseases [40].

There is no consensus regarding the optimal method of athletic screening for cardiovascular disease. In a survey of 51 state high school athletic associations (including the District of Columbia), 43 states used history and physical examination alone with wide variations in content, length, and comprehensiveness [19]. In a study of 193 high school preparticipation health forms, 47 of them (25.3%) addressed cardiovascular symptoms; 97 (52.2%) addressed blood pressure and heart murmurs; and 57 (30.7%) addressed family history. Only 32 forms (17.2%) addressed all three elements of cardiac history recommended by the American Academy of Pediatrics [20].

State law can affect the liability exposure of the physician providing care for athletes. Some states provide immunity for volunteer healthcare providers who assist in athletic care [44]. Physicians who are contractually engaged in the preparticipation physical screening and the regular season medical care may have less protection against liability [55].

Determination of Eligibility

The process of determining the eligibility of an athlete to participate can contribute to litigation. Cervical stenosis is an illustrative condition. Debate continues as to when an athlete with cervical stenosis should be precluded from participation in sports or if an isolated episode of transient quadriplegia should disqualify the athelete [10, 27]. No clear standards exist in the literature; instead, the decision to allow athletic participation often reflects team physician judgment and the opinion of the athlete, coach, and the family. Specialty input may be helpful; thus, a cervical spine injury should be evaluated by a spine specialist before the athlete returns to play. Likewise, an athlete with recurrent headaches should be checked by a neurologist or a neurosurgeon. Specialty evaluation can show the team

physician acted in the best interest of the athlete, and such evaluation can also support difficult decisions that may be unpopular with the athlete, family, or coaching staff. Excluding an athlete from participation can itself trigger a lawsuit. In Pahulu v University of Kansas, a football player who was deemed unfit to compete after transient quadriplegia filed suit against the university and its physicians claiming discrimination [51]. Although the defendants prevailed, the case shows exclusion from athletic activity can lead to litigation, and opinions from competent specialists can be helpful. In Knapp v Northwestern University, a high school senior sustained cardiac arrest and had an implanted defibrillator. He had a basketball scholarship from Northwestern but was disqualified by the team physician, who cited the Bethesda Guidelines [30]. The student filed suit claiming the university had violated the Rehabilitation Act of 1973, which protects individuals with disabilities. The court said it was proper for the team physician to rely on medical standards such as the Bethesda Guidelines [30].

Importance of Documentation

A suboptimal medical outcome from an athletic injury can preclude the athlete from obtaining a college scholarship or receiving the financial benefits of a professional athletic contract. A team physician should avoid making guarantees about the outcome of an injury or treatment. In a 2003 case, a professional football player sued the team physician, claiming additional surgical procedures were performed on his knee beyond what he authorized in the informed consent, although the procedures were most likely indicated based on arthroscopy findings [26]. This case demonstrates the importance in all cases, including athletes, of a thorough preoperative discussion with the patient and documentation of the operation, including variations in the surgical plan that may become necessary during surgery.

Four elements are typically needed to show negligent conduct [61]. First, a duty of care must be shown extending to those who may foreseeably sustain injury by the physician's conduct. Second, a breach of this duty must be shown, usually as a failure by the physician to abide by the standard of care. The standard of care usually refers to the reasonable practices of other similarly situated physicians. Third, the breach must cause injury to the party; and fourth, there must be some damage or harm to the injured party. A duty of care does not exist if the physician is a spectator at a sporting event. However, if a relationship with the athlete is established, a breach of duty can arise. A breach may be related to the adequacy of the preparticipation physical examination, advice concerning the nature and severity of an injury, or returning to sports after an injury.

The standard of care typically refers to the accepted practices and norms of other physicians in that specialty. Causation is established if a direct or proximate relationship can be shown between an alleged breach and the damages sustained by the athlete. Damages can include pain, suffering, and the considerable loss of earning capacity for a professional athlete.

A volunteer team physician could have the athlete and/or a family member sign a waiver and/or a release of liability form before providing treatment. The waiver should be in simple language and should be signed by witnesses. Such waivers do not eliminate liability; litigation related to the death of a 17-year-old football player whose family signed a release form may help define the role of such documentation [24]. A waiver can be advantageous because it shows the athlete was aware of the risks involved with the treatment; the information exchange in the waiver may discourage a lawsuit.

The Team Physician Consensus Statement mentions the importance of proper medical documentation [4]. This is an area that team physicians at the junior and high school level may neglect. Time constraints and the lack of transcription capabilities at the site may discourage full documentation. Nonetheless, it is wise to document all medical care rendered to an athlete regardless of the setting. A handheld recorder is useful in documenting activities during and after a game; this information can be later entered into a medical record. At the minimum, a notebook should be used to record all pertinent information concerning the care of athletes [7].

Coverage of Athletic Events

In Kleinknecht v Gettysburg College, a lacrosse player sustained a fatal cardiac arrest during an off-season practice; plaintiffs claimed the school should have provided competently trained medical staff at the premises. The US Third Circuit held that a university must have an appropriate medical emergency response plan and provide reasonable emergency care to injured athletes [28]. The ruling did not require a sponsor of intercollegiate events to have a certified athletic trainer at all games, but that the possibility of severe injury is foreseeable during contact sports, and an affirmative obligation exists to use reasonable care to protect athletes from harm. This means athletic programs, to ensure participants' safety and to provide a shield from liability, must have in place an emergency preparedness document. The document should outline the precise steps to be taken in the event of severe injury, including responsibilities of all staff, administration of first aid, and summoning of emergency personnel. The athletic program must also dedicate resources and time to

implementing the document. Paid staff and volunteers alike should review the plan regularly and occasionally conduct exercises to test their preparedness to implement all aspects of it [3].

The emergency action plan should cover all areas of the athletic participation in practices, events, and training room activities. Ideally, there should be personnel available at all sponsored events who are trained in cardiopulmonary resuscitation and first aid, although financial constraints and availability of staff may make this impossible for some communities or institutions. An emergency plan that details a course of action for a comprehensive list of emergency situations can show the physician was concerned for the welfare of the athlete. Examples of an emergency action plan can be found at both the National Athletic Trainers Association web site and the National Collegiate Athletic Association Sports Medicine Handbook [5, 29]. Delay in diagnosis and treatment can lead to litigation. In Mogabgab v Orleans Parish School Board, 80 minutes passed after collapse before medical professionals were summoned [45]. The death from prolonged heat stress shows the value of an emergency action plan that is understood and available to all providers who take care of the athlete.

The Team Physician Consensus Statement advises the physician supervising an athletic event is responsible for the care of injuries on the field and that all team physicians should be trained in advanced cardiac life support. Team physicians should develop a plan for dealing with unexpected athletic emergencies. The extent of preparedness for such injuries can be a matter of dispute. For example, gymnasiums are not required to have automatic external defibrillators; the standard calls for basic care and summoning emergency assistance for a patron who sustains a cardiac arrest [32]. In California, recent legislation mandates health clubs to have automatic external defibrillator devices and to provide training to their employees. The National Athletic Trainers Association in 2006 recommended that every school should provide automatic external defibrillator training to first responders and be able to deploy automatic external defibrillator devices in 3 to 5 minutes [67]. A 2005 study found that 82% of National Collegiate Athletic Association Division I universities had at least one automatic external defibrillator in the athletic training room, basketball arena, football stadium, and baseball field [67].

Field Evaluation of Severe Injuries

Concussions can have serious consequences. Because second-impact syndrome entails a 50% mortality rate and a near 100% morbidity rate, appropriate diagnosis, treatment, and restriction from play are important considerations related to a first-time concussion [9, 42]. No uniform system defines the severity of a concussion, and there is no universal method for grading the severity of sports-related concussions [6]. In recent years, scientific research and clinical studies have led to some standards such as the Cantu Colorado Guidelines and the American Academy of Neurology practice parameters in treating concussions [59]. Both of these should be familiar to the team physician. The National Athletic Trainers' Association has compiled a list of guidelines to prevent and manage concussions in young athletes. These guidelines can protect team physicians from litigation related to concussive trauma. High school athletes with Grade 1 concussions demonstrate memory deficits and symptoms that persist beyond the injury such that immediate return to sports is not advisable [34]. Standard neuropsychologic screening to test learning, attention concentration, and information processing should be instituted [14]. Such testing can establish an objective baseline by which the recovery of a postconcussive athlete can be monitored. Several neuropsychologic testing protocols are commercially available and should be used instead of relying on an athlete's symptoms that can underestimate the severity of a concussion [64]. Any athlete who has lost consciousness or experienced amnesia lasting longer than 15 minutes should be seen by a specialist physician. Athletes who are symptomatic at rest and at exertion for at least 20 minutes should be disqualified from sports on the day of injury. Because damage to the maturing brain of young athletes may be catastrophic, athletes younger than 18 should be managed more aggressively; those who sustain three concussions should terminate participation in contact sports [47].

Cervical spine injuries occur at an incidence of approximately 1000 per year, mostly during swimming and diving [18]. In 1976, the football tackling technique called "spearing," in which a player makes head-first contact, was declared illegal. Since then, catastrophic cervical quadriplegia has declined to only five cases in the United States during 1984, and the incidence of cervical spine fractures has fallen from 110 per year to 15 during that time [62]. The sports physician should recognize the type of injuries that occur to the neck and related anatomy, and thoroughly understand neck injuries, cervical stenosis, recurrent stingers, and transient quadriplegia [59].

A team physician should know the pathophysiology of hyperthermia and its progression. Heat illness can progress quickly with heat stroke as the ultimate outcome. Because the mortality rate for heat stroke ranges from 10% to 75%, any sign of a heat-related illness is serious [22]. A team physician should have a comprehensive plan for preventing heat-related illness, including appropriate practice scheduling, rehydration protocols, and information dissemination to players and coaching staff [59]. An overview in the

prevention and treatment of heat-related illness is in the National Collegiate Athletic Association Sports Medicine Handbook [29].

Information Disclosure

The Health Insurance Portability and Accountability Act of 1996 protects patient privacy and provides serious penalties for noncompliance. An athlete must provide written consent for healthcare information to be released in any manner. Privacy concerns may be complicated because athletes can have many caretakers such as trainers, coaches, counselors, and team doctors. All athletes should be asked to execute a consent form to allow release of medical information to these parties and, when necessary, to the media.

Discussion

The purpose of this article has been to review recent developments in the area of legal liability for sports medicine physicians and to provide practical information regarding the duties of the team physician, the need for proper documentation, appropriate coverage of events, evaluation of serious injuries, and information disclosure. In each case, the sports medicine physician may better protect his or her patients from harm and him- or herself from legal liability by taking affirmative steps to develop procedures for the care of athletes before, during, and after participation in an event and ensuring all staff understand these protocols.

Our review was not intended to anticipate and explore every event that will be encountered by the team physician nor the path the courts may take in future cases, but rather provides general guidelines applicable to any sporting category. Our knowledge of specific issues such as treatment of concussion and the use of performance-enhancing drugs continues to evolve and must be the subject of future research. Recent studies suggest athletes engaging in high levels of activity after concussion have demonstrated reduced neurocognitive performance [35]. As our medical knowledge of postconcussion recovery evolves, sports clinicians must take care to ensure they are aware of the latest developments, that this knowledge is reflected in their response to on-field injuries, and that proper postconcussion care is maintained on the practice field.

Caring for the athlete is not a casual undertaking. Athletic care starts with a history and preparticipation examination. An understanding and use of current recommendations and protocols as they relate to athletic care may avoid litigation. Abnormal findings uncovered during screening should be referred to a specialist physician. Use of protocols such as the Bethesda Cardiac Guidelines and neuropsychologic testing can standardize care. The team physician should understand sports injuries such as concussion, cervical spine trauma, cardiac conditions, and heat illness. An emergency action plan can show proactive planning and concern for the athlete and provide a roadmap to coordinate emergency care. Documentation of medical treatment and communication with the athlete may reduce the chances of litigation. Surgical interventions should be discussed thoroughly because the outcomes can change the athlete's future career. Waiver or liability and release of information forms should be used when appropriate.

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